

substrate under which a second electrode is formed; and a dielectric disposed between the first electrode and the second electrode, wherein the dielectric is elastomer.

[0172] According to various embodiments, the lower substrate and the upper substrate may be formed of flexible substrates.

[0173] According to various embodiments, the first electrode and the second electrode may be formed on the lower substrate and under the upper substrate by the covering of graphite.

[0174] An embodiment of the present invention provides an input device using a highly sensitive pressure sensor, the input device including a plurality of pressure sensors; and a control unit that applies an excitation signal to the pressure sensor and controls the output of the pressure sensor, wherein the pressure sensor includes a lower substrate on which a first electrode is formed, an upper substrate under which a second electrode is formed, and a dielectric disposed between the first electrode and the second electrode, wherein the dielectric is elastomer.

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[0176] According to various embodiments, the first electrode and the second electrode may be formed on the lower substrate and under the upper substrate by the covering of graphite.

[0177] According to various embodiments, the control unit may include a main control unit (MCU) which generates an excitation signal input to the pressure sensor and to which a signal output from the pressure sensor input; a de-multiplexer that divides the excitation signal into the plurality of pressure sensors; and a multiplexer that converts parallel signals output from the plurality of pressure sensors into a serial signal.

[0178] According to various embodiments, the control unit may further include an amplifier that amplifies a serial signal output from the multiplexer; and an analog-digital converter that converts the output of the amplifier into a digital signal.

[0179] An input device using a highly sensitive pressure sensor according to an embodiment of the present invention manufactures a pressure sensor by using materials commonly used in a daily life, for example, materials, such as paper and graphite that may manufacture copy paper, pencils, etc., so there is an effect in that it is possible to provide a significantly low-priced input device according to the reduction of material and manufacturing process costs simultaneously with implementing a high-sensitivity property.

[0180] Also, it is possible to provide a bendable input device because the input device is manufactured by using a flexible substrate, and accordingly, there is an effect in that it is possible to provide an input device easy to carry.

[0181] As described above, the sensitivity of a pressure sensor is enhanced without significantly changing the process of the pressure sensor, so it is possible to provide an input device that divides pressure measured by the pressure sensor into a plurality of levels to handle various inputs with a single pressure sensor.

[0182] Although various embodiments of the present invention are described above, the spirit of the present invention is not limited to the embodiments presented in the specification and a person skilled in the art may easily

propose other embodiments by the adding, change, deletion, addition, etc. of components within the scope of the same spirit, but the other embodiments would also be within the scope of the spirit of the present invention.

What is claimed is:

1. A highly sensitive pressure sensor comprising:
 - a lower substrate on which a first electrode having surface roughness is formed;
 - an upper substrate on which a second electrode having surface roughness is formed; and
 - a dielectric material stacked between the lower substrate and the upper substrate to be disposed between the first electrode and the second electrode.
2. The highly sensitive pressure sensor of claim 1, wherein the dielectric material covers an uneven surface of the first electrode or the second electrode by the surface roughness of the first electrode or the second electrode.
3. The highly sensitive pressure sensor of claim 2, wherein the dielectric material comprises elastomer, wherein weight percentage in the dielectric material of the elastomer is determined according to the surface roughness and a thickness of the formed dielectric material.
4. The highly sensitive pressure sensor of claim 1, wherein the lower substrate or the upper substrate is a flexible or stretchable material.
5. The highly sensitive pressure sensor of claim 1, wherein the surface roughness of the first electrode or the second electrode is represented by surface roughness of the lower substrate or the upper substrate.
6. The highly sensitive pressure sensor of claim 1, wherein the surface roughness of the first electrode or the second electrode is generated when an electrode is formed or generated by processing after the electrode is formed.
7. The highly sensitive pressure sensor of claim 1, wherein the dielectric material comprises:
 - a lower dielectric layer that the first electrode has; and
 - an upper dielectric layer that the second electrode has.
8. The highly sensitive pressure sensor of claim 7, wherein the lower dielectric layer is in close contact with the first electrode to allow the surface roughness of the first electrode to be represented on the lower dielectric layer, and the upper dielectric layer is in close contact with the second electrode to allow the surface roughness of the second electrode to be represented on the upper dielectric layer.
9. The highly sensitive pressure sensor of claim 8, wherein an air layer is formed in a portion of a region between the lower dielectric layer and the upper dielectric layer.
10. The highly sensitive pressure sensor of claim 9, wherein an interlocked structure is formed by engaging of at least a portion of surfaces of the lower dielectric layer and the upper dielectric layer, in a case where pressure is applied to at least one of the lower substrate and the upper substrate.
11. The highly sensitive pressure sensor of claim 10, wherein the air layer formed between the lower dielectric layer and the upper dielectric layer is removed or divided into smaller air layers based on the interlocked structure, in a case where pressure is applied to at least one of the lower substrate and the upper substrate.
12. An input device using a highly sensitive pressure sensor, the input device comprising:
 - at least one highly sensitive pressure sensor of claim 1; and